AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Original)   A three-dimensional visual inspection method of semiconductor packages comprising the steps of:

performing a camera calibration (S100) to obtain the intrinsic parameters of a camera (12) and a prism (14) by using an object of which the exact three-dimensional information is known;

reading (S102) the stereo image that is obtained by inducing the light on a package element (18) and transmitting the light through said prism (14), which splits the light from said package element (18) into two different optical paths, and mapping a spatial point into two different points on an image plane (20) thereby;

extracting (S104) the characteristic points, which are corresponding to each other, from said two images;

calculating (S106) the disparity between two points;

extracting (S108) the distances to the corresponding points and three-dimensional coordinates from the result of said calculating step (S106);

presuming (S110) a spatial plane using the three-dimensional information extracted through said extracting step (S108); and

performing (S112) a planarity inspection, which is a three-dimensional inspection, by analyzing the relative distribution of the characteristic points to said spatial plane.

6. (Original) A three-dimensional visual inspection method of semiconductor packages as claimed in claim 5,

wherein the characteristic points on the image in said extracting step (S104) are vertexes of spherical-shaped balls in case that said package is a BGA package.

7. (Original) A three-dimensional visual inspection method of semiconductor packages as claimed in claim 5,

wherein the characteristic points on the image in said extracting step (S104) are edges at the ends of the legs in case that said package is an SOP package.

8. (Original) A three-dimensional visual inspection method of semiconductor packages as claimed in claim 5,

wherein the three-dimensional distance in said extracting step(S108) is calculated by the following equation:

[Equation 3]

,

where,

,   ,   ,

d : disparity calculated on the image, [pixel],

ZP : distance to the characteristic point, [mm],

k1, k2 : intrinsic parameters of the camera(12),

tZ : distance from the image plane(20) to the prism(14), [mm],

d : internal angle of the prism(14), [radian],

f : focal length of the camera lens(22), [mm],

cx : length of an image sensor cell along with X-axis, [mm].

9. (Original)   A three-dimensional visual inspection method of semiconductor packages as claimed in claim 5,

wherein the planar equation in the presuming step (S110) is calculated by the following equation:

[Equation 4]

where a, b, c, and d are coefficients of the planar equation extracted.